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205 East 63rd Street
New York, NY 10065

February 2, 2024

Stephen H. Weil, Esq.
Loevy & Loevy
311 N. Aberdeen
3rd Floor
Chicago, IL 60607

Re: **Christine Boyer, deceased**

Dear Mr. Weil,

I have reviewed the following records concerning Christine Boyer, deceased:

1) First Amended Complaint
2) Third Amended Complaint
3) Fourth Amended Complaint
4) USA Medical Answer to Fourth Amended Complaint
5) ACH Answer to Fourth Amended Complaint
6) Monroe County Answer to Fourth Amended Complaint
7) Gundersen Lutheran Medical Center 12/23/19-12/27/19;
8) Sparta Ambulance 12/23/19;
9) Documents produced by defendants with the following bates ranges:
    a. MONROE_COUNTY_000050 - MONROE_COUNTY_000087
    b. MONROE_COUNTY_001091 - MONROE_COUNTY_001146
    c. MONROE_COUNTY_001147 - MONROE_COUNTY_001213
    d. MONROE_COUNTY_001409 - MONROE_COUNTY_001411
    e. MONROE_COUNTY_000050 - MONROE_COUNTY_000087
    f. MONROE_COUNTY_001091 - MONROE_COUNTY_ 001213
10) Monroe County Sheriff's Office/Jail Division records;
11) Gundersen Health Records 2011-2019;
12) Mayo Clinic.
13) Tomah Health
14) The Medicine Shoppe
15) MedTox Laboratories
16) Phillips Pharmacy
17) Sparta Ambulance
18) Michigan Medicine
19) MCW Pain Management Center
20) Autopsy
21) Death Certificate
22) MCW Pain Management Center; and the

23) All group deposition exhibits and Deposition transcripts of Brook Dempsey, Amber Fenigkoh, Danielle Nelson, Shasta Parker, Lisa Pisney, Lucas Runice, Travis Schamber, Ryan Hallman, Jeffrey Schwanz, Fritz Degner, Stanley Hendrickson, Vicki Riley, and Kyle Moga
24) Monroe County Jail CCTV footage December 23, 2019

All opinions in this report are rendered within a reasonable degree of medical certainty.

FACTUAL BACKGROUND

Upon her incarceration in the Monroe County jail on 12/21/19-12/23/19, Christine Boyer was a 41-year-old woman with a past medical history of a cardiomyopathy (LVEF by echocardiogram 35% to 40%). She further had a history of asthma and took bronchodilators. Ms. Boyer had chronic hypertension (for which she was likewise medicated), and chronic hypokalemia, for which she was also receiving medication. Ms. Boyer was known to have a cardiomyopathy, with a reduced left ventricular ejection fraction of 35% to 40%.

Finally, Ms. Boyer had yolk sac cancer as a baby, which was successfully treated in her infancy, and was without recurrence.

When she arrived at the jail on Saturday 12/21/19 Ms. Boyer was intoxicated, and she stated that she had less than 1 year to live. Her medical records do not support her having any reason for that to be true. She had no terminal illness, and in fact, her medical condition was relatively stable with a good life expectancy (see below).

On Sunday 12/22/19 at approximately 3:00 pm Ms. Boyer was noted to feel hot, sweaty, and to have difficulty breathing. She was also found to have significantly elevated blood pressure readings. The systolic blood pressure was initially identified as being 177 (with the diastolic not recorded but noted by a correctional officer as being "something really high"). Over the ensuing two hours Ms. Boyer was treated with doses of clonidine.

After treatment with 0.2 mg clonidine, her blood pressure was noted to be 169/105 at 3:45 pm. At 5:00 pm her blood pressure was noted to be 164/101, and an additional dose of 0.1 mg clonidine was administered. The records indicate that her blood pressure was not measured between 5:00 pm and approximately between 7:26 pm to 8:09 pm.

At approximately 7:26 pm to 8:09 pm on 12/22/19, Ms. Boyer was noted to have experienced chest pain. A chest-pain form was used in her evaluation, and recorded the following information, with a recorded time of 8:09 pm:

S. **Ask the detainee:**
History of heart disease, diabetes, elevated blood pressure or other medical conditions?
congestive heart failure asthma
Currently on any heart medication? (Pull MAR) Lisinopril, Amlodipine, Coerig
Any history of cocaine usage? NO
* How long has pain been there? on and off all day, hasn't eaten
* What caused pain? doesn't know
* Any similar symptoms before? yes - went to ER
* Does pain come and go? yes, but tonight now constant
What type of Chest Pain is it?
Dull, aching, sharp or pressure? achy and stabbing "I'm not right"
Any nausea or vomiting? yes
Shortness of breath? yes & dizziness
Location of chest pain (where is the pain?)
Pain in neck, shoulder or arm? underneath left shoulder
Have detainee pinpoint area of pain. under left breast/in area

O. **Examine the detainee:**
Vitals: BP: 144/102 Temp: 84 BPM Pulse: 84 Resp: as. 8
General Appearance:
* Any shortness of breath: some
* Any abnormal sweating: None observed

The form indicates that at approximately 8:09 pm Ms. Boyer was given 81 mg of aspirin, and no other medication or treatment for the symptoms recorded on the chest pain form. The chest pain form additionally indicates that the following information was recorded for Ms. Boyer at 8:53 pm:

Blood Pressure/Vital sign re-check
@ 20:53. BP 142/92 02:100% BPM: 84-87
#1288 Sgt Parker

The records do not indicate any monitoring of Ms. Boyer's vitals between 8:53 pm and approximately 1:00 am on Monday 12/23/19.

On 12/23/19 at approximately 12:51 am, Ms. Boyer suffered a catastrophic event. At that time, she was noted on the CCTV monitor to suffer from what appeared to be a seizure. A correction officer reached her cell at approximately 12:54 am and attempts to gain Ms. Boyer's attention. At 12:55 am Ms. Boyer was given a sternal rub, without any response. Chest compressions were initiated at 12:57 am. At 1:02 am, Ms. Boyer received her first AED shock. The timeline and video reflect that correctional staff responded aggressively and appropriately, but they also the difficulties posed in responding effectively to a cardiac arrest outside of a medical setting, which I describe below.

At 1:04 am EMS arrived and began ACL protocol treatment. Ms. Boyer received all in all multiple shocks, intubation, and acute medical therapy. She regained spontaneous circulation and was transported via helicopter to Gundersen Lutheran Hospital in LaCrosse, Wisconsin.

The EKG taken in the Gundersen Emergency Room demonstrated 1-2 mm of ST segment depression in leads II, III, and aVF, as well as inverted T waves in leads II, III, aVF, V3-V6. This EKG was consistent with a major episode of inferolateral wall ischemia. Ms. Boyer blood testing was remarkable for her having a serum potassium level of 2.3.

Ms. Boyer suffered end-stage anoxic brain damage due to her cardiac arrest. She never awoke, though her heart survived the arrest. She died on 12/27/19 (4 days after her cardiac arrest).

Ms. Boyer underwent an autopsy, which demonstrated pulmonary edema fluid in the lungs, as well mild evidence of pneumonia on gross examination. On microscopic review of the lung tissue, the autopsy concluded "*Significant acute pneumonia, however, is not identified.*"

METHODOLOGY

In arriving at my opinions regarding the cause of Ms. Boyer's death, the methodology I used was the same methodology I use in my medical practice to identify the cause of an adverse medical event. I evaluate a patient's clinical presentation, including symptoms, physical findings, and laboratory findings and create a list of both likely diagnoses and the most life-threatening diagnoses. Then through the process of elimination, I can arrive at the diagnosis that best fits the patient's presentation.

I also used my medical education, training, ongoing continuing education, and experience to evaluate Ms. Boyer's clinical presentation to determine the nature of her diagnosis, and the cause of her death.

In her case, Ms. Boyer had a known cardiomyopathy with a reduced left ventricular ejection fraction of 35% to 40%. She was complaining of chest pain and shortness of breath in the hours before her cardiac arrest. She had an abnormal EKG upon presentation to the emergency room, showing ST segment depression in multiple leads. Finally, her potassium level was 2.3, which is a critical value, especially in a patient with underlying heart disease. All clinical indications demonstrated that Ms. Boyer's cardiac arrest was caused by her heart disease. Further she had no evidence of acute lung disease; and certainly, no evidence of lung disease potent enough to cause a cardiac arrest.

OPINIONS

It is my opinion that her shortness of breath at 3:00 pm and lasting at least through 5:00 pm was likely caused by her acute hypertension acutely superimposed on her chronically weakened left ventricle. Ms. Boyer's heart was under the stress of such elevated blood pressure readings which resulted in her suffering from congestive heart failure and shortness of breath.

Ms. Boyer's elevated blood pressure readings were most likely caused by the emotional impact of being arrested, as well as the lack of her medications used to control her hypertension. She did not receive any blood pressure medications on Sunday 12/22/19 until 3:00 pm.

It is my opinion that chest pain symptoms (as recorded on chest pain form at or after 7:26 pm) were likely caused by the continued marked elevation of her blood pressure superimposed on her chronically weakened left ventricle. This created ischemia in the left ventricle and caused shortness of breath and chest pain. Ms. Boyer's EKG demonstrated acute ischemic changes when she reached the emergency room, confirming her coronary ischemia.

It is my opinion that Christine Boyer suffered a primary cardiac arrest at approximately 12:51 am on 12/23/19 while incarcerated at the Monroe County jail. Her cardiac arrest was provoked by her hypertensive episodes recorded during the afternoon and evening of 12/22/19 (provoking congestive heart failure and coronary artery ischemia). Further Ms. Boyer's underlying hypokalemia was a substantial contributing factor towards her episode of sudden cardiac death.

Ms. Boyer's reduced left ventricular ejection fraction increased her risk of suffering from a cardiac arrest. Her development of chest pain and shortness of breath indicated a significant increase of that risk. Acute ischemia, caused by major hypertension, creates a powerful environment for the provocation of sudden cardiac death. In addition, Ms. Boyer's potassium level of 2.3 was an additional underlying trigger for sudden death as well. Hence the combination of low potassium, high blood pressure, underlying cardiomyopathy, manifested by chest pain/shortness of breath, all coincided to cause her to suffer a primary cardiac arrest.

Ms. Boyer had been recently diagnosed with hypokalemia and was treated with outpatient doses of potassium. Her levels had never dropped as severely as they did on 12/23/19 with a level of 2.3.

As Ms. Boyer's heart was subject to the ongoing stress of accelerated hypertension, the cardiac muscle strength progressively weakened over the course of the day. As a result, Ms. Boyer's overall cardiac condition worsened progressively, from her experiencing shortness of breath to her experiencing chest pain, and finally to her suffering from a cardiac arrest.

Ms. Boyer was tested at 8:53 pm and reflected a still-elevated blood pressure (142/92). Her condition and symptoms were never documented to have resolved. Regardless, her chest pain through remaining continuous, or through coming and going episodically would not change the likelihood of her having experienced acute coronary ischemic symptoms on Sunday 12/22/19 – Monday 12/23/19, which in turn resulted in her cardiac arrest. The symptoms do not need to be present continuously, as episodic symptoms indicate a similar risk toward suffering a cardiac arrest.

It is my opinion that the provision of 81 mg of aspirin to Ms. Boyer at approximately 8:09 pm did not serve to protect her from her ultimate cardiac arrest. The decision to treat Ms. Boyer with aspirin when she developed chest pain indicates the health care provider's concern that Ms. Boyer was suffering from myocardial ischemia as the basis of her chest pain. The purpose of treating a patient with aspirin is to stabilize a clot, as a clot is a common underlying mechanism towards having an acute coronary syndrome. (Notably provision of aspirin in such circumstances is not a substitute for emergency medical attention and transport for care in an emergency room, as aspirin can sometimes slow, but is not expected to stop, damage to the heart from lack of oxygen resulting from the clot.)

However, as is often the case with people with symptoms of an acute coronary syndrome, Ms. Boyer did not have a clot as the underlying cause of her acute coronary syndrome. Instead, her condition was that of severe episodic hypertension superimposed on her underlying cardiomyopathy, with the additional danger of her underlying hypokalemia. Her being treated with aspirin did not have the ability to prevent her suffering from a cardiac arrest.

It is my opinion, within a reasonable degree of medical certainty, that had Ms. Boyer been sent to the emergency room at any point in time between 3:00 pm to 11:30 pm on 12/22/19, she would not have suffered from a cardiac arrest. Had Ms. Boyer been referred to an emergency room between 3:00 pm and 11:30 pm, she would have been placed on continuous cardiac monitoring. She would have had a 12-lead EKG taken, which would have shown the deep ischemic abnormalities that were noted later that evening. She also would have been given a chest x-ray, which would have resulted in a diagnosis of pulmonary edema.

In the Emergency Room, Ms. Boyer would have been treated with supplemental oxygen, intravenous diuretics, ACE inhibitors, and bed rest.

Blood testing would have diagnosed Ms. Boyer with severe hypokalemia, and Ms. Boyer would have been treated, in accordance with the standard of care, with intravenous supplemental doses of potassium. She would have had frequent potassium levels drawn. Standard care in an emergency department would have been to hold and treat Ms. Boyer until her cardiac emergency stabilized both through reduction of blood pressure and delivery of potassium therapy.

With simple treatment outlined above, with the medications, supplements, and other care discussed above, Ms. Boyer would have avoided developing pulmonary edema, would have avoided going into congestive heart failure, and would have avoided suffering from a sustained cardiac arrest. She would have been successfully treated and would have survived this hospitalization.

Had Ms. Boyer been transferred to an emergency room between 11:30 pm and up to moments before her cardiac arrest, the cardiac arrest would not have likely been prevented by interventions in the emergency room. There would not have been enough

time to reduce the blood pressure, diurese Ms. Boyer of enough fluid, and to replace an effective amount of potassium to have resulted in a prevention of the code. However, Ms. Boyer would have, within a reasonable degree of medical certainty, avoided suffering from anoxic brain damage.

Ms. Boyer suffered anoxic brain damage because of her cardiac arrest occurring outside of a hospital, which resulted in a lapse of several minutes in her receiving advanced life support. The time it took for her to receive CPR and ACLS care in the Monroe County Jail resulted in her brain suffering massive damage, even though her heart was able to survive. The brain is much more sensitive to oxygen deprivation than the heart (which has the greatest tolerance of oxygen deprivation of any organ in the body).

Had Ms. Boyer arrived in the ER shortly before her code, she would have been placed on an EKG monitor and other monitoring to record her heart function. Her arrest would have been detected instantaneously, and it would have been addressed by medical personnel within a matter of seconds. She would have had immediate CPR and ACL. She would have been rapidly intubated and rapidly shocked into sinus rhythm. Ms. Boyer's heart would have survived (as it survived under far worse conditions due to the minutes that elapsed at the jail in receiving this critical therapy), but her brain would also have survived.

Ms. Boyer's death on 12/27/19 (4 days after her cardiac arrest) was largely the result of her massive neurologic damage with no hope of recovery. Had Ms. Boyer had a full neurologic recovery, she would have been continually and aggressively been treated, and would not have died on 12/27/19.

It is my opinion that Ms. Boyer's cardiac arrest, experienced at approximately 12:40 am on 12/23/19, caused her death (which was not expressed until 12/27/19). Ms. Boyer's death certificate included "probable pneumonia" as the principal cause of death, however pneumonia was not found on autopsy. The autopsy was performed approximately 4 days after Ms. Boyer suffered a cardiac arrest. Over those 4 days (especially after being intubated emergently in the field) some level of aspiration pneumonia would have been expected to develop in the bases of the lung. This would presumably be the source of the "probable pneumonia" listed on the death certificate, as the basis for that cause of death is otherwise lacking.

The autopsy was not capable of showing the original serum potassium level of 2.3, which was present at the moment of this patient's arrest. Indeed, the Attestation of Alaina J. Webb, M.D. from 12/23/19 at 5:54 am, stated that Ms. Boyer suffered from a "*cardiac arrest likely secondary to electrolyte abnormalities*." The admitting chest x-ray showed evidence of pulmonary edema, and changes in the base of the lungs with a possibility of pneumonia.

A hospital note written on 12/23/19 by Dr. Faraaz Zafar listed under the assessment of the pulmonary system to be that related to asthma and the patient's intubation. But there was no mention of pneumonia or infection. Under ID, it does state that the chest x-ray

showed potential basilar pneumonia, but there was no further evidence to suggest that diagnosis.

The discharge diagnosis listed multiple abnormalities, including "*acute respiratory failure secondary to cardiac arrest, acute on chronic systolic heart failure, cardiac arrest likely due to known cardiomyopathy and electrolyte abnormalities, cardiomyopathy LVEF 35%-40%, and hypokalemia.*" Pneumonia was not listed as one of the diagnoses in the hospital discharge summary.

Looking at the clinical course of Ms. Boyer, pneumonia was not a credible source for her cardiac arrest on 12/23/19. She was not suffering from high fevers, low blood pressures, major cough, or sputum production when she was being evaluated by the staff at the Monroe County Jail. Ms. Boyer did not develop sepsis at any point after her hospitalization. Hence there was no possible mechanism for Ms. Boyer to have suffered either a pulmonary arrest or a cardiac arrest due to pneumonia on 12/23/19.

She did not have major secretions in her lungs. She was not seriously infected, having no evidence of infected sputum, and no clinical suspicion of bacteria in her blood. She was not showing evidence of toxicity. There was no pathway by which Ms. Boyer could have deteriorated in those early morning hours due to even a theoretical case of pneumonia.

Further she had a known cardiomyopathy, which explains her predisposition for cardiac arrest. Additionally, she had a severely reduced serum potassium level (2.3), which served as a major trigger for cardiac arrest, especially in the setting of having an underlying cardiomyopathy. Finally, she had hypertension, which was out of control, resulting in her suffering from myocardial ischemia (seen on her 12-lead EKG) and suffered from congestive heart failure, which further tipped her into developing a cardiopulmonary arrest.

LIFE EXPECTANCY

It is further my opinion that Ms. Boyer's life expectancy at the time of her death would be 5-10 years shorter than the average life expectancy for an average woman of her age. The average life expectancy would have been an additional 40 years, giving her a likely survival of 81 years. However, minus the 5-10 years for her heart disease, her life expectancy would have been surviving to the age of 71-76 years of age.

Ms. Boyer was 41 years old at the time of her death. Her only serious long-term medical problem was her underlying cardiomyopathy, with her baseline ejection fraction being measured at 35% to 40%. She had other chronic medical conditions, such as high blood pressure and asthma. As I stated earlier, when Ms. Boyer was first incarcerated on 12/21/19, she not only told the staff at the Monroe County Jail that she had less than 1 year to live, but she also indicated that all her organs were failing.

In arriving at my opinions regarding Ms. Boyer's life expectancy, I began by recognizing that CDC life tables provide the average life-expectancy for a persons given age, gender,

and ethnicity. This number is not the life expectancy for the healthiest patients for their individual cohort, but for the average patient in their cohort. The healthiest patients will live longer than the observed average. The sickest patients will live shorter than the observed average.

The average patient, like Christine Boyer, has chronic medical conditions that need chronic care and management. They have potentially underlying hypertension, diabetes, high cholesterol, coronary artery disease, and any other number of chronic conditions. When calculating Ms. Boyer's life expectancy, I considered that her major difference from the average patient of her cohort was her weakened life expectancy. Ms. Boyers' other problems, such as her asthma, hypertension, and hypokalemia, are already "baked into" the average life expectancy for a patient of her demographic. Hence her reduced left ventricular ejection fraction is the only condition that separates her from the average for her underlying state.

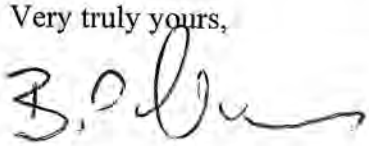
There is no evidence that Ms. Boyers suffered from recurrent hospitalizations from congestive heart failure due to her ejection fraction of 35% to 40%. Hence her underlying cardiomyopathy had a relatively minor impact on her survival. I chose to be conservative and take off more years than would have likely occurred, leaving her with an additional 5 to 10 years off her average life expectancy.

Ms. Boyer appears to have had chronic abdominal pain as a result of the interventions to treat her childhood cancer, but her organs were not failing. She had good overall function and hence she had a good long-term prognosis. There is no indication in the records that Ms. Boyer faced any major life-limiting etiologies. There is no indication in the record that she had recurrent emergency room visits due to any form of progressive organ disease. As I stated earlier in this report, Ms. Boyer's estimated life expectancy would have been approximately 5 to 10 years below the average life-expectancy for a woman of her age. This estimate is based on the negative impact of her reduced left ventricular ejection fraction.

According to CDC lifetables, the average woman of Ms. Boyer's demographic, at age 41 in 2019, was expected to live an additional 40 years (to age 81). Ms. Boyer, factoring in her cardiomyopathy and reducing her life expectancy down by 5 to 10 years, would have expected to live to the ages of 71 to 76 years.

All opinions in this report have been rendered within a reasonable degree of medical certainty.

Very truly yours,



Bruce D. Charash, M.D., F.A.C.C.